

What is claimed is:

1. A method for operating an electrodeionization deionized water producing apparatus comprising, between an anode chamber having an anode and a cathode chamber having a cathode, a desalination chamber in which a side near the anode is demarcated by an anion exchange membrane and a side near the cathode is demarcated by a cation exchange membrane and a concentrating chamber in which a side near the anode is demarcated by a cation exchange membrane, a side near the cathode is demarcated by an anion exchange membrane, and the anode side of the anion exchange membrane is filled with an anion exchanger, the method comprising the step of:

supplying water containing free carbon dioxide to the concentrating chamber.

2. A method for operating an electrodeionization deionized water producing apparatus comprising, between an anode chamber having an anode and a cathode chamber having a cathode, a desalination chamber in which a side near the anode is demarcated by an anion exchange membrane and a side near the cathode is demarcated by a cation exchange membrane and a concentrating chamber in which a side near the anode is demarcated by a cation exchange membrane and a side near the cathode is demarcated by an anion exchange membrane and which concentrating chamber is filled with a mixture ion exchanger of an anion exchanger and a cation exchanger, the method comprising

the step of:

supplying water containing free carbon dioxide to the concentrating chamber.

5 3. A method for operating an electrodeionization deionized water producing apparatus according to Claim 1, wherein

in the concentrating chamber, an anion exchanger is provided on the anode side of the anion exchange membrane and a water permeating material having no strongly basic anion exchange group is provided
10 between the anion exchanger and the cation exchange membrane.

4. A method for operating an electrodeionization deionized water producing apparatus according to Claim 2, wherein

the mixture ion exchanger filled into the concentrating chamber
15 is a mixture ion exchanger in which a percentage of the cation exchanger increases from the side near the anion exchange membrane toward the side near the cation exchange membrane.

5. A method for operating an electrodeionization deionized water
20 producing apparatus according to any one of Claims 1 through 4, wherein

the water to be supplied to the concentrating chamber is water having a concentration of free carbon dioxide of 0.5 mg-CO₂/l - 200 mg-CO₂/l.

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6. An electrodeionization deionized water producing system having an electrodeionization deionized water producing apparatus, wherein

the electrodeionization deionized water producing apparatus
5 comprises, between an anode chamber having an anode and a cathode chamber having a cathode, a desalination chamber in which a side near the anode is demarcated by an anion exchange membrane and a side near the cathode is demarcated by a cation exchange membrane and a concentrating chamber in which a side near the anode is
10 demarcated by a cation exchange membrane, a side near the cathode is demarcated by an anion exchange membrane, and the anode side of the anion exchange membrane is filled with an anion exchanger;

a decarbonator is provided upstream of the electrodeionization deionized water producing apparatus;

15 treated water of the decarbonator is supplied to the desalination chamber of the electrodeionization deionized water producing apparatus; and

water to be treated by the decarbonator is supplied, without being treated by the decarbonator, to the concentrating chamber
20 of the electrodeionization deionized water producing apparatus.

7. An electrodeionization deionized water producing system having an electrodeionization water producing apparatus, wherein

the electrodeionization deionized water producing apparatus
25 comprises, between an anode chamber having an anode and a cathode

chamber having a cathode, a desalination chamber in which a side near the anode is demarcated by an anion exchange membrane and a side near the cathode is demarcated by a cation exchange membrane, and a concentrating chamber in which a side near the anode is demarcated by a cation exchange membrane and a side near the cathode is demarcated by an anion exchange membrane and which concentrating chamber is filled with a mixture ion exchanger of an anion exchanger and a cation exchanger;

a decarbonator is provided upstream of the electrodeionization deionized water producing apparatus;

treated water of the decarbonator is supplied to the desalination chamber of the electrodeionization water producing apparatus; and

water to be treated of the decarbonator is supplied, without being treated by decarbonator, to the concentrating chamber of the electrodeionization deionized water producing apparatus.

8. An electrodeionization deionized water producing system according to Claim 7, wherein

the mixture ion exchanger in the concentrating chamber is a mixture ion exchanger in which a percentage of the cation exchanger increases from the side near the anion exchange membrane toward the side near the cation exchange membrane.

9. An electrodeionization deionized water producing apparatus

comprising, between an anode chamber having an anode and a cathode chamber having a cathode,

a desalination chamber in which a side near the anode is demarcated by an anion exchange membrane and a side near the cathode
5 is demarcated by a cation exchange membrane; and

a concentrating chamber in which a side near the anode is demarcated by a cation exchange membrane, a side near the cathode is demarcated by an anion exchange membrane, an anion exchanger is provided on the anode side of the anion exchange membrane, and
10 a water permeating material having no strongly basic anion exchange group is provided between the anion exchanger and the cation exchange membrane.

10. An electrodeionization deionized water producing apparatus,
15 comprising, between an anode chamber having an anode and a cathode chamber having a cathode:

a desalination chamber in which a side near the anode is demarcated by an anion exchange membrane and a side near the cathode is demarcated by a cation exchange membrane and which desalination
20 chamber has two small desalination chambers separated by an intermediate ion exchange membrane provided between the anion exchange membrane and the cation exchange membrane; and

a concentrating chamber in which a side near the anode is demarcated by a cation exchange membrane and a side near the cathode
25 is demarcated by an anion exchange membrane and which concentrating

chamber is filled with a mixture ion exchanger of an anion exchanger and a cation exchanger; wherein

an upstream decarbonator is omitted and permeate water of a reverse osmosis membrane device is directly used as water to be treated and water to be supplied to the concentrating chamber.

11. An electrodeionization deionized water producing apparatus comprising, between an anode chamber having an anode and a cathode chamber having a cathode:

10 a desalination chamber in which a side near the anode is demarcated by an anion exchange membrane and a side near the cathode is demarcated by a cation exchange membrane and which desalination chamber has two small desalination chambers separated by an intermediate ion exchange membrane provided between the anion exchange membrane and the cation exchange membrane; and

15 a concentrating chamber in which a side near the anode is demarcated by a cation exchange membrane, a side near the cathode is demarcated by an anion exchange membrane, the anode side of the anion exchange membrane is filled with an anion exchanger, and a water permeating material having no strongly basic anion exchange group is provided between the anion exchanger and the cation exchange membrane; wherein

20 an upstream decarbonator is omitted and permeate water of a reverse osmosis membrane device is directly used as water to be treated and water to be supplied to the concentrating chamber.